

the administrator can also invoke the first step, make a preliminary set of Host/LUN assignments and then invoke the second step to deploy the agents. Doing so will provide the administrator with continuous access (other than the time for a reboot) to those LUNs which have been assigned. Assignments made between the two steps are displayed as "pending" until the second
5 step (deployment) has been completed. Until the second step is executed the filter driver 354 is considered disabled and file extensions will not occur. The first step only allows initial assignments to be made before masking is enabled.

Launching Device Specific Applications

10 As discussed above, a SAN according to the invention can include a variety of components, such as one or more digital data processors hosts, one or more storage device, and a switching fabric, having a variety of components, such as, switches, hubs, gateways, for providing communication between the hosts and the storage devices. These components are typically acquired from
15 different vendors, and have various application software associated therewith. For example, the switching fabric components can have vendor-specific management applications that allow configuring and/or managing these components.

The illustrated embodiment permits the SAN operator/administrator to execute these vendor-
20 specific applications from a single graphical user interface, to wit, that SAN manager GUI 20, in a manner described in more detail below.

With reference to FIGURE 6 and FIGURE 42, the SAN manager service 38 maintains a representation of the SAN that provides information, *inter alia*, regarding the identity of the SAN components, and the connectivity of these components. In addition, the manager service 38 maintains for selected components, for example, the switching fabric components, information regarding management applications specific to them. These can be applications, by way of non-limiting example, residing directly on the components, applications invoked or effected through HTTP, telnet or other servers residing on the components or on proxy services residing elsewhere, and/or via applications running on the SAN manager itself. This information is stored, for example, in a file, referred to herein as a "Rules" file, which identifies each of the selected components and the applications and communication interfaces supported by that component, e.g., telnet, SNMP. In the illustrated embodiment, a mark-up language, e.g, XML, is utilized to format the information contained in the Rules file, though in other formats may be used instead or in addition.

Information regarding the component management applications can be obtained from the operator/administrator (e.g., via prompt and/or menu option when the respective components are first added to the system or subsequently) and/or obtained directly from the components themselves. In the case of the latter, the information can be obtained via standardized queries, such as Management Server queries or FC MANAGEMENT MIB queries. In the case of components that cannot respond to such queries with the necessary information (as where the corresponding management application resides on the SAN manager itself) and/or that have multiple management applications, any information obtained from the component is augmented

in the Rules file with information, e.g., obtained from the operator/administrator, identifying the necessary or preferred application.

The Netview server can effect retrieval of the SAN representation from the manager service 38 and the display of selected information discerned from the retrieved representation on the Netview console 52, as described in detail above. In one embodiment, the Netview console 52 displays a plurality of graphical objects, e.g., icons, each of which represents one of the SAN components. Alternatively, a textual list of the SAN components can be displayed. Further, the Netview console 52 provides an operator, e.g., the SAN administrator, with a user interface element, such as keyboard or mouse, that permits selection of one of the displayed components.

The Netview server allows the operator to launch an application process associated with a selected SAN component, such as, a management application residing on that component, such as, a switch, in a manner described below. In response to the selection of a graphical object representing a SAN component, the Netview server accesses the Rules file to obtain information regarding the application processes associated with that selected component, and effects the display of this information, for example, in the form of a menu, on the Netview console 52. In some embodiment, a plurality of management applications residing on a selected component are displayed while in other embodiments, only the primary management application is displayed. To facilitate the display of information regarding on the SAN components on the Netview console, in some embodiments, the Netview server stores the information retrieved from the SAN manager service 58 regarding the applications residing on the SAN components in a persistable storage.